

March 1990

MATERIAL SAFETY DATA SHEETS

Stainless Steel

Duplex Grades 22/5 and Ferralium® 255

Bar, Sheet, Plate

Examples: T-303, 304, 316, 17-4PH, T410, 416

I. INGREDIENTS

Material or Component	CAS Number	% Weight	Exposure Limits	
			OSHA PEL (mg/m ³)	ACGIH (mg/m ³)
Base Metal				
Iron (Fe)	7439-89-6	39 – 81	10 (Fe ₂ O ₃ Fume)	5.0 (Fe ₂ O ₃ Fume)
Alloying Elements				
Carbon (C)	7440-44-0	0.5 Max.	None Listed	None Listed
Manganese (Mn)	7439-96-5	10.0 Max.	5.0 as dust; 1 as fume	5.0 as dust; 1 as fume
Phosphorous (P)	7723-14-0	0.001 – 0.2	0.1 as Phosphorous	0.1 as Phosphorous
Sulfur (S)	7704-34-9	0.001 – 0.35 Max.	13 (Sulfur Dioxide)	5 (Sulfur Dioxide)
Silicon (Si)	7440-21-3	2.0 Max.	10 total dust	10 total dust
Chromium (Cr)	7440-47-3	10 – 27	1.0 as chromium	0.5 as chromium
Nickel (Ni)	7440-02-0	0 – 22	1.0 as Nickel	1.0 as Nickel
Selenium (Se)	7782-49-2	0 – 0.35	0.2 as Selenium	0.2 as Selenium
Columbium (Cb)	7440-03-1			
Tantalum (Ta)	7440-25-7	10 x C % WT	5.0 as Tantalum	5.0 as Tantalum
Copper (Cu)	7440-50-8	0.04 – 4	0.1 as fume; 1.0 as dust	0.2 as fume; 1.0 as dust
Molybdenum (Mo)	7439-98-7	0 – 4	15 as insoluble compds	10 as insoluble compds
Aluminum (Al)	7429-90-5	0 – 2	5.0 as welding fumes	5.0 as welding fumes
Titanium (Ti)	7440-32-6	0.70 Max.	15 as Ti O ₂	15 as Ti O ₂

Note: The above listing is a summary of elements used in alloying steel. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts.

II. PHYSICAL DATA

Material is (At Normal Conditions):			Appearance and Odor:	
<input type="checkbox"/> Liquid	<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Gas	<input type="checkbox"/> Other	Gray-Black with Metallic Lustre — Odorless
Acidity/Alkalinity	Melting Point	Approx. 2700°F	Specific Gravity (H ₂ O = 1) — Approx. 8	Vapor Pressure (mm Hg at 20°C)
ph = NA	Boiling Point	NA°F	Solubility in water (% by weight) — NA	NA

III. PERSONAL PROTECTION EQUIPMENT

Respiratory Protection NIOSH approved dust/mist/fume respirator should be used during welding or burning if OSHA PEL or TLV is exceeded.	Hands, Arms and Body Use appropriate protective clothing such as welders aprons and gloves when welding or buring. Check local codes
Eyes and Face Safety glasses should always be worn grinding or cutting; face shields should be worn when welding or burning.	Other Clothing and Equipment As required, depending on operation and Safety Codes.

IV. EMERGENCY MEDICAL PROCEDURES

Inhalation:	Remove to fresh air; if condition continues, consult physician.
Eye Contact:	Immediately flush well with running water to remove particulate; get medical attention.
Skin Contact:	If irritation develops, remove clothing and wash well with soap and water. If condition persists, seek medical attention.
Ingestion:	If significant amounts of metal are ingested, seek medical attention.

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